AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1. (Original): A method of producing an LnCuOX single-crystal thin film, wherein Ln is at least one selected from the group consisting of lanthanide elements and yttrium, and X is at least one selected from the group consisting of S, Se and Te, said method comprising the steps of:

growing a base thin film on a single-crystal substrate;

depositing an amorphous or polycrystalline LnCuOX thin film on said base thin film to form a laminated film;

enclosing said laminated film in a closed vacuum environment, and

then annealing said laminated film at a high temperature of 500°C or more in said vacuum environment.

2. (Original): The method as defined in claim 1, wherein said base thin film is made of either one material selected from the group consisting of Cu, Cu2S, CuS, Cu2O, CuO, CuCl, CuCl2, CuI, Ag, Ag2S, Ag2O, AgO, AgCl, AgI and Au.

3. (Original): The method as defined in claim 1, wherein said single-crystal substrate is made of either one material selected from the group consisting of YSZ, Y2O3, STO, Al2O3 and MgO.

4. (Original): The method as defined in claim 1, wherein said base thin film is a Cu thin film, and said single-crystal substrate is made of either one material selected from the group consisting of YSZ, Y2O3 and MgO, wherein said Cu thin film is grown on a (100) plane of said single-crystal substrate.

5. (Original): The method as defined in claim 1, wherein said annealing step is performed in an atmosphere containing LnCuOX vapor.

6. (Original): The method as defined in claim 1, which includes the step of covering the surface of said deposited amorphous or polycrystalline LnCuOX thin film by an YSZ single-crystal plate in advance of said enclosing step.

7. (Original): The method as defined in claim 1, which includes the steps of:

preparing an additional laminated film composed of said amorphous or polycrystalline LnCuOX thin film, said base thin film and said single-crystal substrate, or

composed of said amorphous or polycrystalline LnCuOX thin film and said single-crystal substrate; and

attaching the respective surfaces of said additional laminated film and said laminated film formed in said depositing step together in advance of said enclosing step.

8-11. (Cancelled).

12. (New): A method of producing an $Ln_{1-y}M_yCuOX$ single-crystal thin film, wherein Ln is at least one selected from the group consisting of lanthanide elements and yttrium, $0<y<1$, and M is at least one selected from the group consisting of Mg, Ca, Sr, Ba and Zn and X is at least one selected from the group consisting of S, Se and Te, said method comprising the steps of:

growing a base thin film on a single-crystal substrate;

depositing an amorphous or polycrystalline $Ln_{1-y}M_yCuOX$ thin film on said base thin film to form a laminated film;

enclosing said laminated film in a closed vacuum environment, and

then annealing said laminated film at a high temperature of 500°C or more in said vacuum environment.

13. (New): A method of producing a single-crystal $LnCuOX_{1-x}X'_x$ or $Ln_{1-y}M_yCuOX_{1-x}X'_x$ solid-solution thin film, wherein $0<y<1$, $0<x<1$; Ln is at least one selected from the group

consisting of lanthanide elements and yttrium; M is at least one selected from the group consisting of Mg, Ca, Sr, Ba and Zn and each of X and X' is at least one selected from the group consisting of S, Se and Te, wherein X and X' are different elements, said method comprising the steps of:

preparing a substrate consisting of the LnCuOX single-crystal thin film or the $Ln_{1-y}M_yCuOX$ single-crystal thin film;

depositing an $LnCuOX_{1-x}X'_x$ or $Ln_{1-y}M_yCuOX_{1-x}X'_x$ thin film on said substrate to form a laminated film;

enclosing said laminated film in a vacuum chamber, and

then annealing said laminated film at a high temperature of 500°C or more in said vacuum environment.

14. (New): A method of producing an $LnCuOX_{1-x}X'_x$ single-crystal solid solution thin film, wherein $0<x<1$, Ln is at least one selected from the group consisting of lanthanide elements and yttrium, and X and X' is at least one selected from the group consisting of S, Se and Te, wherein X and X' are different elements, said method comprising the steps of:

growing a base thin film on a single-crystal substrate;

depositing an amorphous or polycrystalline $LnCuOX_{1-x}X'_x$ solid solution thin film on said base thin film to form a laminated film;

enclosing said laminated film in a closed vacuum environment, and

then annealing said laminated film at a high temperature of 500°C or more in said vacuum environment.